Patent Claims

1. A method for synchronization of a receiver to a transmitter or to a transmission signal in an information transmission system, in particular a mobile radio system, with the method having a step of time synchronization,
characterized
in that at least two physical channels in the information transmission system are used in parallel with one another for synchronization, a separate correlation evaluation is carried out, and the evaluation results for the channels (Y_p (k), y_s^1 (k)...y_s^{17} (k)) are then linked to form a time synchronization indicator.

2. The method as claimed in claim 1,
characterized
in that at least one channel, which is intended for some other purpose and has a transmission signal sequence which is at least partially known, is used for time synchronization.

3. The method as claimed in claim 1 or 2,
characterized
in that the channel whose transmission signal sequence is at least partially known is a monitoring or data channel in the information transmission system.

4. The method as claimed in claim 2,
characterized
in that the channel whose transmission signal sequence is at least partially known is a synchronization channel, in particular for a higher-level frame structure.

5. The method as claimed in one of the preceding claims,
characterized in that the known code words in a second channel are formed by modulation with Hadamard sequences, and the correlation

evaluation in the second channel is carried out using a fast Hadamard transformation.

6. The method as claimed in one of the preceding claims,
characterized
in that the protocol for the information transmission system does not provide any fixed phase relationship between the channels used for time synchronization, and the evaluation results for the channels are linked by incoherent accumulation.

7. The method as claimed in one of the preceding claims,
characterized
in that the protocol for the information transmission system provides a fixed or defined phase relationship between the channels used for time synchronization and, in particular, also provides for these channels to be transmitted via the same antenna, and the evaluation results for the channels are linked by coherent accumulation.

8. The method as claimed in one of the preceding claims,
characterized
in that the results obtained in the time synchronization step are stored and are used for a further synchronization step, in particular for frame synchronization.

9. The method as claimed in one of the preceding claims,
characterized
in that the overshooting or undershooting of a threshold value for a parameter which identifies the capability to evaluate the signals in the

corresponding channel, in particular the signal amplitude or the bit error rate, is defined as a predetermined condition.

10. The method as claimed in one of the preceding claims,
characterized
in that the evaluation results for the channels are weighted before the linking process, as a function of a parameter which identifies the capability to evaluate the signals in the corresponding channel, in particular the signal amplitude or the bit error rate.

11. An apparatus for carrying out the method as claimed in one of the preceding claims, in particular for use in the mobile station of a mobile radio network, having a receiving section for the channels used for time synchronization,
characterized by
in each case at least one correlator stage (3, 5), which is associated with the channels (PSCH, SSCH) that are used, for determining the received signal correlation (Y_p (k), y_s^1 (k)...y_s^{17} (k)) on a channel-by-channel basis, and a calculation unit (7), which is downstream from the correlator stages, for calculating the time synchronization indicator (z(k)).

12. The apparatus as claimed in claim 11,
characterized by
configuration for determining and evaluating the correlation in a primary synchronization channel for frame or symbol synchronization, and in a secondary synchronization channel for synchronization to a higher-level frame structure and/or for identification of further parameters, such as a scrambling code group, which comprises one or more different but known code words.

13. The apparatus as claimed in claim 12,
characterized by

an evaluation stage (9), which is downstream from the calculation unit (7), for accumulation, and a maximum detector (11) which is connected to the output of said evaluation stage (9).

14. The apparatus as claimed in one of claims 11 to 13,

characterized by

configuration of the calculation unit (7) for coherent or incoherent accumulation of the output signals (y_p (k), y_s^1 (k)...y_s^{17} (k)) from the correlator stages (3, 5).